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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/628,047 | 07/24/2003 | Yoshikazu Kato | 112857-412 | 4039 |

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| EXAMINER |
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DOVE, TRACY MAE

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| ART UNIT | PAPER NUMBER |
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1745

DATE MAILED: 07/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|-------------------------------|-----------------------------|--|
| Office Action Summary | Application No. 10/628,047 | Applicant(s) KATO ET AL. | |
| | Examiner Tracy Dove | Art Unit 1745 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 4-8 and 12-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 9-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Election/Restrictions

Claims 4-8 and 12-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 5/12/06.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshino et al., US 5,631,100.

Yoshino teaches a secondary battery comprising an a lithium-containing composite metal oxide cathode active material, a negative electrode and an electrolyte (abstract). The cathode active mixture contains 0.1-20 pbw, preferably 0.5-10 pbw of a binder material based on 100 pbw of the electrode active material. The binder preferably comprises a styrene-butadiene latex (7:6-14). When a water-soluble polymer, such as styrene-butadiene latex is used as a binder, a

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water-soluble thickener may be added as an additive thereto in an amount of 2-60 pbw per 100 pbw of the solid value of the styrene-butadiene latex. Examples of water-soluble thickeners are carboxymethylcellulose and methyl cellulose (8:8-17). The cathode may contain 5 pbw of carbon material (graphite + acetylene black) to 100 pbw of positive active material (Examples). The battery exhibits a high voltage operative at a voltage of from 2.6 to 3.5 V (12:10-40).

Thus the claims are anticipated.

*

Claims 1, 3, 9 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Marugan et al., US 6,455,202.

Marugan teaches a positive electrode for a lithium rechargeable electrochemical cell wherein the electrode comprises a paste containing both an electrochemically active material and a binder (abstract). The binder may comprise an elastomer and a cellulose compound (thickener). The elastomer is preferably selected from SBR or NBR (synthetic rubber latex adhesive). In a first embodiment, the binder includes a SBR elastomer and a carboxymethylcellulose cellulose compound (3:1-21). The binder contains 30-70% by weight of said cellulose compound relative to the sum of the weight of said elastomer plus the weight of said cellulose compound (3:27-29). Examples 4-6 are analogous to Examples 1-3 with the exception that the binder comprised 2% by weight of NBR in suspension at 41% by weight in water and 2% by weight of salified carboxymethylcellulose in solution at 2% in water. The positive electrode includes 86% of active material, 8% by weight of a carbon-based conductive material and 6% by weight of the binder (8:34-67). The cell includes a negative electrode (3:59-67) and an electrolyte (4:6). Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al., US 6,632,566 in view of Marugan et al., US 6,455,202 and/or in view of Yoshino et al., US 5,631,100.

Yamada teaches a nonaqueous electrolyte secondary battery comprising a positive electrode containing a $\text{Li}_x\text{M}_y\text{PO}_4$ compound (abstract). The battery further comprises a negative electrode and electrolyte (4:46-55). As a binder contained in the positive electrode active material, any suitable known resin material, routinely used as a binder for a layer of the positive electrode active material of this sort of nonaqueous battery, may be used (6:41-45).

Yamada does not teach a binder comprising a rubber latex and a thickener.

However, Marugan teaches a positive electrode for a lithium rechargeable electrochemical cell wherein the electrode comprises a paste containing both an electrochemically active material and a binder (abstract). The binder may comprise an elastomer and a cellulose compound (thickener). The elastomer is preferably selected from SBR or NBR (synthetic rubber latex adhesive). In a first embodiment, the binder includes a SBR elastomer and a carboxymethylcellulose cellulose compound (3:1-21). The binder contains 30-70% by weight of said cellulose compound relative to the sum of the weight of said elastomer plus the weight of said cellulose compound (3:27-29). Examples 4-6 are analogous to Examples 1-3 with the exception

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that the binder comprised 2% by weight of NBR in suspension at 41% by weight in water and 2% by weight of salified carboxymethylcellulose in solution at 2% in water. The positive electrode includes 86% of active material, 8% by weight of a carbon-based conductive material and 6% by weight of the binder (8:34-67). The cell includes a negative electrode (3:59-67) and an electrolyte (4:6).

Furthermore, Yoshino teaches a secondary battery comprising an a lithium-containing composite metal oxide cathode active material, a negative electrode and an electrolyte (abstract). The cathode active mixture contains 0.1-20 pbw, preferably 0.5-10 pbw of a binder material based on 100 pbw of the electrode active material. The binder preferably comprises a styrene-butadiene latex (7:6-14). When a water-soluble polymer, such as styrene-butadiene latex is used as a binder, a water-soluble thickener may be added as an additive thereto in an amount of 2-60 pbw per 100 pbw of the solid value of the styrene-butadiene latex. Examples of water-soluble thickeners are carboxymethylcellulose and methyl cellulose (8:8-17). The cathode may contain 5 pbw of carbon material (graphite + acetylene black) to 100 pbw of positive active material (Examples). The battery exhibits a high voltage operative at a voltage of from 2.6 to 3.5 V (12:10-40).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have been motivated to use the known binder of Marugan or the known binder of Yoshino for the positive electrode binder of Yamada. Yamada teaches as a binder contained in the positive electrode active material, any suitable known resin material, routinely used as a binder for a layer of the positive electrode active material of this sort of nonaqueous battery, may be used (6:41-45). Both

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Marugan and Yoshino are directed toward nonaqueous batteries with positive electrode binders containing rubber latex adhesive and a thickener.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 19, 2006


TRACY DOVE
PRIMARY EXAMINER